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A NEW ERINACEID FROM THE LOWER MIOCENE

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INTRODUCTION

The discovery of a new erinaceid in the lower Miocene of Nebraska adds to our information concerning this family which is so sparingly represented in the Tertiary of North America. Previous knowledge of the Erinaceidae of this continent was limited to two Eocene, three Oligocene, one upper Miocene, and two lower Pliocene genera. The specimen described here constitutes the first lower Miocene record of the family in this country. On the evidence of the parts preserved it must be referred to the genus *Metechinus*, known hitherto from the upper Miocene Niobrara River, the lower Pliocene Burge, and the lower Pliocene Fish Lake Valley local faunas.

I wish to express my sincere thanks to R. A. Stirton of the University of California for the loan of the type of *Metechinus nevadensis* and of *Meterix latidens*. The drawings are by Mr. John J. Janecek, Staff Illustrator, Field Museum.

Erinaceidae Bonaparte

Metechinus marslandensis sp. nov.

Holotype.—F.M. No. P26399. Incomplete left mandible with M_1 and M_2 .

Horizon and locality.—Marsland formation. About seven miles northwest of Marsland, Nebraska.

Diagnosis.—Smaller than *Metechinus nevadensis*. Talonid and trigonid on M_{1-2} of equal width; in *M. nevadensis* talonid of M_1 wider than trigonid and trigonid of M_2 wider than talonid. Hypoconid of M_1 less elongated antero-posteriorly and higher than in *M. nevadensis*. M_2 proportionately smaller and with trigonid slightly longer antero-posteriorly than in *M. nevadensis*.

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Description.—On M_T the trigonid is equal in width to the talonid and nearly twice as long and twice as high. The paraconid is slightly lower than either the metaconid or protoconid and is separated from the former by a broad, deep basin which opens lingually. The paraprotoconid blade is high, narrow, and slightly concave dorsally. The protoconid and metaconid are of equal height and are separated by a median antero-posterior valley. The entoconid is conical, slightly compressed transversely, and higher than the hypoconid. The hypoconulid is an inconspicuous eminence situated midway between the entoconid and hypoconid.

M_2 is similar to M_T , but is greatly reduced in size. The paraconid touches the posterior border of M_T between the hypoconulid and the entoconid. There is no trace of a hypoconulid. The ramus fragment does not extend far enough behind M_2 to reveal whether or not M_3 was absent as in *M. nevadensis*. If present it was undoubtedly vestigial.

Affinities of Metechinus.—*Metechinus* resembles *Erinaceus* rather closely in dental structure. This similarity led Matthew (1929, p. 93) to regard the two genera as closely related despite differences in skull and tooth proportions and dental formulae. He suggested that *Metechinus* might have been derived from *Erinaceus* (which seems rather unlikely since the latter is not known previous to the Miocene)¹ or, and more likely, from *Palaeoerinaceus*. Excellent material of *Palaeoerinaceus* has been described recently by Viret (1938), and Matthew's opinion requires re-examination in the light of this new evidence.

Metechinus differs from *Palaeoerinaceus* in several cranial and dental characters, of which the following may be especially noted. Skull wider and shorter, no palatal fenestrae,² upper canine smaller, probably one less upper premolar. M_3 lost and M_2 consequently modified, P_4 notably smaller. No one of these characters nor indeed all of them together necessarily rule out ancestor-descendant relationships between the two genera, but, in the absence of any known intermediate form, they do render such an assumption

¹ Matthew thought that *Erinaceus* was present in the Oligocene; he also lists (1929, p. 95) *Palaeoerinaceus* as occurring in the Eocene, evidently on Leche's authority. This is denied by Viret (1938, p. 27).

² Matthew believed that Filhol's specimen of *Palaeoerinaceus* lacked palatal fenestrae. Judging solely from this author's figure (1879, pl. 1 bis) such might seem to be the case, but the text flatly contradicts the illustration. Filhol described three separated orifices on the right side of the specimen, and stated that on the left side these were connected, thus definitely foreshadowing the fenestrae of *Erinaceus*. Viret's figures of *Palaeoerinaceus* show well-developed fenestrae, so that this character is evidently subject to individual variation in the genus.

rather uncertain, not to say improbable. The anterior incisors of *Metechinus* are unknown, and until they are discovered it will be unwise to speculate on the relationships of this form to *Palaeoerinaceus*. In the latter these teeth are enlarged, open at the roots (fide Viret), and vaguely rodent-like, quite different from those of *Erinaceus*, a fact which led Viret (1938, p. 28) to believe that these two genera "appartiennent... à deux rameaux étroitement apparentés, mais distincts."

Matthew noted several resemblances between *Metechinus* and *Palaeoscaptor*.¹ The latter is similar to *Palaeoerinaceus* in all observable characters, even in the possession of enlarged anterior incisors. So close indeed is the resemblance that it is possible that



FIG. 15. *Metechinus marslandensis* sp. nov. Type, F.M. No. P26399. External, crown, and internal views of M_{1-2} . $\times 4$.

the Asiatic and European forms may not be separable generically, but this question can not be decided until the Mongolian specimens have been more fully studied.

Several American genera that have been placed in the Erinaceidae may be reviewed briefly in this connection. *Meterix latidens* (Hall, 1929) is a contemporary of *Metechinus nevadensis*, and the type was discovered in the same local fauna. Despite this close spatial and temporal association, the two forms seem to be rather widely separated phyletically. The dental formula of *Meterix*, $\overline{3}, \overline{1}, \overline{3}, \overline{3}$, as interpreted by Hall, is less reduced than that of *Metechinus*, and there are several differences in molar structure.

Although he described both *Brachyerix* and *Metechinus*, Matthew made no comparisons between them. This is the more surprising because these two genera seem to be rather closely related. Skulls of both are known, but, due to differences in preservation, comparison

¹Originally placed in the Soricidae (Matthew and Granger, 1924, p. 3) but shown by Teilhard de Chardin (1926, p. 8) to be an erinaceid, a view that seems to have been accepted by Matthew. Simpson (1931, pp. 12-13) later came to the same conclusion.

is limited to the skull roof, facial region, palate and upper cheek-teeth. The proportion of the palatal width, including M^1 , to the length from the premaxillary suture¹ to the paroccipital process is practically the same in both² and appreciably greater than in *Erinaceus*. The skulls of both are short in comparison with *Erinaceus*, the shortening, as noted by Matthew (1929, p. 97), affecting all parts of the skull uniformly. Various features correlated with this shortening, such as the position of the infraorbital foramen above P^3 and its closeness to the orbital border, sharply defined orbital border situated above P^4 , position of lachrymal foramen within orbital rim, rather strongly divergent zygomatic roots and loss of M^3 with consequent modification of M^2 , are essentially similar in *Brachyerix* and *Meterix*. Palatal fenestrae are lacking in both. Absence of a hypocone on P^4 of *Brachyerix* is perhaps the most conspicuous difference between the two. There can be little doubt that these genera are closely related and represent a short-skulled phylum of the family which is so far as known confined to North America, there ranging from Arikareean to Clarendonian.

The structural ancestry of this phylum is more likely to be found in a form such as *Proterix* (Matthew, 1903)³ of the American Oligocene than in *Palaeoerinaceus*. *Proterix* lacks palatal fenestrae and has the *Erinaceus* dental formula and palatal proportions. The form and arrangement of the facial bones seemingly offer no peculiarities.⁴ Matthew seems to have denied implicitly the possibility of ancestor-descendant relationship between *Proterix* and *Brachyerix* by his statement (1933, p. 4) that "the skull of *Proterix* of the White River does not approach this one in any of the points indicated above; it is a proerinaceid, whereas the present genus is a para-erinaceid."

¹ In his description of *Brachyerix*, Matthew stated that the two-rooted alveolus anterior to P^3 was probably for a premolar. Comparison with *Metechinus* strongly suggests that it was for the canine, and that the premaxillary suture was close to if not on the anterior extremity of the type.

² Matthew gives these measurements for *Metechinus* (1929, p. 98), but he published no measurements whatever for *Brachyerix* (1933). It was necessary to measure from his figure, a rather unsatisfactory procedure but one adequate perhaps for this general comparison.

³ Matthew more than once stated that this genus tended to connect the Leptictidae and Erinaceidae. He did not state in what characters it did so and I am somewhat at a loss to understand the basis for his belief. The explanation of it perhaps lies in his statement that P^4 is molariform, which, if true, would be a decidedly leptictid character. There is no evidence for it, however, because the external half of this tooth is broken off on both sides of the type, the only known specimen. It is highly probable, in fact almost certain, that P^4 had but one outer cusp. This has already been suspected by Stock (1935, p. 215).

⁴ Matthew (1903, p. 229) states that the premaxillae do not reach the frontals, but his figure shows that only the right one fails to do so.

The "points" in question are the specializations of *Brachyerix* (and of *Metechinus*) mentioned above. *Proterix* as a more generalized form does not possess them, it is true, but their absence may merely indicate the primitive condition of this genus. Certainly there is no reason to rule out the possibility that *Proterix* is a form through which, or at least near which, the ancestry of the *Metechinus-Brachyerix* phylum passed.

MEASUREMENTS

(In millimeters)

	<i>Metechinus marslandensis</i>	<i>Metechinus nevadensis</i>	<i>Metelix latidens</i>
M ₁ A-p.....	4.6	5.3	3.0
M ₁ Tr.....	2.0	2.7	2.4
M ₂ A-p.....	2.7	3.6	2.5
M ₂ Tr.....	1.7	2.2	1.7

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